

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of operating a computer having a pipelined processor having a branch target buffer (BTB) comprising creating a recent entry queue, said recent entry queue comprising a set of branch target buffer (BTB) entries in parallel with the branch target buffer (BTB), organizing the recent entry queue as a FIFO queue, comparing an entry to be written into the BTB against valid entries within the recent entry queue, blocking an entry matching an entry within the recent entry queue from being written into the BTB, searching the recent entry queue to detect looping branches, comparing the branch to determine if it was recently written into the queue, determining if the branch is backwards branching whereby a looping branch is detected, and if a looping branch is detected that is not predicted thereafter delaying a decode, and writing an entry into the BTB when it is also written into the recent entry queue.
- 2.-3. (Canceled)
4. (Currently Amended) The method of claim [[[3]]] 1 wherein the recent entry queue is ~~full~~ fully associative for reading.
- 5.-7. (Canceled)
8. (Originally Presented) The method of claim 1 comprising searching the BTB for a next predicted branch and evaluating the recent entry queue while the BTB is being indexed.

9. (Originally Presented) The method of claim 8 wherein the recent entry queue maintains a depth up to the associativity of the BTB whereby while the BTB is indexed, the recent entry queue positions are input to comparison logic.
10. (Currently Amended) The method of claim 8 comprising searching the recent entry queue ~~depth in respect to~~ for a matching branch in parallel to searching BTB output.
11. (Currently Amended) The method of claim 10 comprising creating hit detect logic to ~~supports~~ support the associativity of the BTB.
12. (Originally Presented) The method of claim 8 comprising using a subset of the recent entry queue as a subset of the BTB.
13. (Originally Presented) The method of claim 12 comprising fast indexing recently encountered branches.
14. (Currently Amended) The method of claim 12 comprising searching the complete recent entry queue to block duplicate BTB writes.
15. -18. (Canceled)
19. (Currently Amended) The method of claim ~~[[[18]]]~~ 1 comprising delaying decode until a fixed number of cycles.
20. (Currently Amended) The method of claim ~~[[[19]]]~~ 1 comprising delaying decode until the BTB predicts a branch.
21. (Originally Presented) The method of claim 1 comprising staging writes to the BTB in the recent entry queue.

22. (Currently Amended) The method of claim 21 comprising delaying a write and placing the write in the recent event queue.

23. (Currently Amended) The method of claim 22 comprising detecting a predicted branch while its BTB write is temporarily staged in the recent entry queue.

24. (Currently Amended) A computer having a pipelined processor comprising comparing a branch target buffer (BTB) ~~comprising~~ with a recent entry queue, said recent entry queue comprising a set of branch target buffer (BTB) entries in parallel with the branch target buffer (BTB) , said computer organizing the recent entry queue as a FIFO queue, comparing an entry to be written into the BTB against valid entries within the recent entry queue, blocking an entry matching an entry within the recent entry queue from being written into the BTB, searching the recent entry queue to detect looping branches, comparing the branch to determine if it was recently written into the queue, determining if the branch is backwards branching whereby a looping branch is detected, and if a looping branch is detected that is not predicted thereafter delaying a decode, and writing an entry into the BTB when it is also written into the recent entry queue.

25. (Originally Presented) The computer of claim 24 wherein the recent entry queue comprises a set of branch target buffer (BTB) entries.

26. (Originally Presented) The computer of claim 25 wherein the recent entry queue is a FIFO queue.

27. (Currently Amended) The computer of claim 26 wherein the recent entry queue is ~~full~~ fully associative for reading.

28. (Currently Amended) A program product comprising a computer readable medium having computer readable code thereon for controlling and configuring a computer having a pipelined processor and a branch target buffer (BTB) to ~~creating~~ create a recent entry queue, said recent entry queue comprising a set of branch target buffer (BTB) entries in parallel with the branch target buffer (BTB)), organizing the recent entry queue as a FIFO queue, comparing an entry to be written into the BTB against valid entries within the recent entry queue, blocking an entry matching an entry within the recent entry queue from being written into the BTB, searching the recent entry queue to detect looping branches, comparing the branch to determine if it was recently written into the queue, determining if the branch is backwards branching whereby a looping branch is detected, and if a looping branch is detected that is not predicted thereafter delaying a decode, and writing an entry into the BTB when it is also written into the recent entry queue.

29. – 30. (Canceled) The program product of claim 28 wherein the recent entry queue comprises a set of branch target buffer (BTB) entries.

30. (Currently Amended) The program product of claim ~~[[[29]]]~~ 28 further comprising code for organizing the recent entry queue as a FIFO queue.

31. (Currently Amended) The program product of claim ~~30~~ 28 comprising code for making the recent entry queue ~~is full~~ fully associative for reading.

32. – 33. (Canceled) The program product of claim 28 further comprising code for comparing an entry to be written into the BTB against the valid entries within the recent entry queue.

34. (Currently Amended) The program product of claim ~~[[[32]]]~~ 28 further comprising code for writing an entry into the recent entry queue when the entry is written into the BTB.

35.-37. (Canceled)

38. (Currently Amended) The program product of claim ~~[[[37]] 28]~~ comprising code for creating hit detect logic to support the associativity of the BTB.

39. (Currently Amended) The program product of claim ~~[[[35]]] 28~~ comprising code for using a subset of the recent entry queue as a subset of the BTB.

40. (Originally Presented) The program product of claim 39 comprising code for fast indexing recently encountered branches.

41. (Currently Amended) The program product of claim 39 comprising code for searching the complete recent entry queue to block duplicate BTB writes.

42.- 45. (Canceled)

46. (Currently Amended) The program product of claim ~~[[[45]]] 28~~ comprising code for delaying decode until a fixed number of cycles.

47. (Originally Presented) The program product of claim 46 comprising code for delaying decode until the BTB predicts a branch.

48. (Originally Presented) The program product of claim 28 comprising code for staging writes to the BTB in the recent entry queue.

49. (Currently Amended) The program product of claim 48 comprising code for delaying a write and placing the write in the recent event queue.

50. (Currently Amended) The program product of claim 49 comprising code for detecting a predicted branch while its BTB write is temporarily staged in the recent entry queue.